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ABSTRACT

In order to evaluate how individual characteristics of hospitalized children influence their acquisition of information presented in a film depicting preparation for surgery, 42 children between the ages of 4 to 17 were assigned to experimental and control groups that were matched for age, sex, race, type of surgery and previous hospital experience. The experimental subjects viewed a film presenting information concerning hospital procedures and control subjects viewed a film unrelated to hospitals. Several measures were taken, including baseline, pre-, and post-treatment measures of heart rate and Palmar Sweat Index. A questionnaire designed to assess the amount of information children had about general hospital procedures related to surgery, called the Hospital Information Test, was administered to both experimental and control groups immediately following film presentation. In addition, an IQ test and several other measures were administered. Measures of postoperative recovery were taken from medical charts and through questionnaires administered after the children had left the hospital. Hypotheses concerning the effectiveness of the film presentation, age differences in learning the information presented, the effect of children's prior experience of surgery on their learning of the information presented, and arousal level as a predictor of information acquisition were tested. Results are discussed. (Author/RH)

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Information Acquisition in Children Undergoing Medical Procedures

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A recent survey by Peterson and Ridley-Johnson (1980) reported that over 70% of the hospitals providing pediatric care for non-chronic conditions use psychological preparation routinely with patients undergoing diagnostic or surgical procedures. And it is assumed that all children can benefit to some extent by receiving support and information about what to expect. This may not be the case.

The purpose of the studies to be presented was to evaluate different individual subject characteristics as they influence a child's acquisition of information about impending surgery.

The process of preparing children for surgery has been haphazard in that there has been a lack of identification of children at risk for emotional disturbances following surgery. Instead a preparatory package is presented across children of varying ages and types of medical procedures with an assumption that it is better to be prepared than unprepared. However, very few studies have actually measured what information the child acquired during the preparation. Despite a literature in child development which pinpoints age as a critical variable in determining a child's conceptual abilities and memory capacity, materials prepared for standard preoperative procedures are used with children from preschool up to adolescence. Our earlier studies pinpointed the necessity of evaluating the age of the child in determining the

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optimal time for preparation. Melamed, Meyer, Gee and Soule (1976) demonstrated that children under the age of seven were best prepared at the time of the hospital admission. Those shown a film seven days prior to admission showed a sensitization effect with increased Palmar Sweating and more disruptive behaviors preoperatively. Ferguson (1979) also found that while 6-7 year olds benefited from a preadmission home visit prior to surgery, those children between 3 and 6 years of age did best when they viewed a modeling tape at the time of admission for surgery.

Another neglected factor by which patients differ is whether or not they had had previous experience in the hospital situation. If information is thought to be an important ingredient, as it is in most hospital preparatory packages than those children with prior surgery experience already have some information regarding the impending events. It is often thought that misinformation or the aversive emotional experience that may have been present in the past hospitalization could lead to problems. Yet, there have been few studies in the surgery area that have evaluated previous experience as a main factor. In a study by my colleague, Dr. Siegel, it was discovered that children who had previously had an operation were at a higher level of arousal in terms of Palmar Sweating at the time of film presentation. They did not show any greater reduction of fear than a matched group of patients who were prepared with an unrelated film. In our work in the dental operatory, it was found that previous experience was important to deciding what type of preparation should occur. Children without

prior experience were made more disruptive following a brief demonstration of what would occur in the absence of a peer model. Children who had previous experience benefitted just as much from this brief demonstration as they did from a long peer modeling film showing the entire procedure (Melamed, Yurcheson, Fleece, Hutcherson & Hawes, 1978). Other studies in which modeling film were presented to children already experienced in dental treatment failed to show a significant advantage to preparation (Klorman, Hilpert, Michael, LaGona & Sveen, 1980).

There is a lack of theoretical development in this area. Some talk of modeling effects, others of a moderate level of arousal facilitating coping. Our research also explored the interrelationships between autonomic changes and the processing of fear relevant information.

Our specific predictions were:

1. Relevant INFO about hospitalization will be obtained from an audioslidetape above that already known by children.
2. Children under the age of seven will not acquire as much information from this type of preparation as those above 8.
3. Children who have had previous surgery experience will acquire more information from preparation since they have a background against which to encode it.
4. Arousal level as measured by Palmar Sweat activity and heart rate will predict information acquisition.

METHOD

Procedure

Forty-two children between the ages of four to seventeen were assigned to either hospital slidetape[1] preparation or unrelated control film conditions. These groups were matched in overall age, sex, race, type of surgery and previous experience. Table 1 shows the sample characteristics.

Insert Table 1

After informed consent was obtained, the child and parent were separated. While the parent filled out some questionnaires in the day room, the child was seen individually for forty minutes. This usually took place the afternoon or evening prior to surgery on the day of hospital admission. By this time, the child had received a blood test, brief examination by the nurse or doctor during which blood pressure was taken.

The child was told that some of his/her responses would be measured. Table 2 summarizes the kinds of measures used and the time that they were assessed. Measurement of heart rate (HR) and Palmar Sweat Index (PSI) was demonstrated for the child, and baseline HR and PSI measures were then taken. In addition to baseline measurement, HR and PSI were taken immediately before and after film presentation. The Hospital Information Test is a 20-item questionnaire which was designed to assess the amount of information children had about general hospital procedures related to surgery. The items were general although the slide-tape

hospital preparation was used to formulate pertinent questions.

In order to evaluate the effects of hospital preparatory material above and beyond general knowledge, this test was administered to both the experimental and control film groups immediately following film presentation. An IQ test was administered in order to make sure that performance on the information test was not biased by verbal ability. Other measures selected had been used in previous research on film modeling effectiveness. In addition, several measures of postoperative recovery were taken from the medical chart and through posthospital questionnaires filled out by the parent 4-6 weeks after hospital discharge.

RESULTS

The results indicated that children presented with a hospital relevant slide tape acquired more information about the impending events than those children who did not receive this preparation ($t = 2.55$, $p < .02$). These findings are shown in Figure 1.

When the effects of age and previous experience were examined it was clear that every child was not benefiting to the same extent. Figure 2 showed that regardless of type of preparation, older children between the ages of 8 and 17 had significantly more information than younger children ($t = 5.8$, $p < .001$). Older children who saw the hospital relevant preparation significantly enhanced their knowledge relative to those in the same age group who had not received the relevant preparation ($t = 3.7$, $p < .001$).

Effects of previous experience are seen in Figure 3. When

children with previous experience were given hospital relevant preparation, they got significantly more information correct than children with previous experience who did not receive the relevant preparation ($t = 4.6$, $p < .001$). Children without previous experience did not show a greater percent of information correct after viewing the hospital relevant film.

There were also differences in physiological responses of children seeing a hospital relevant film. Figure 4 revealed that children seeing the hospital relevant film showed significantly greater heart rate increase pre- to post- film than children shown an unrelated control film ($t = 1.99$, $p < .06$). Figure 5 indicates that children who saw the hospital relevant film also showed significantly greater reduction in Palmar Sweating pre- to post- film than children shown the unrelated control film ($t = 2.67$, $p < .02$).

That decrease in Palmar Sweating occurred primarily in those children with no previous experience. Figure 6 revealed that children with no previous experience who viewed the hospital film showed significantly greater reduction in Palmar Sweating than those children with previous experience who also viewed the hospital relevant film ($t = 2.13$, $p < .05$). The decrease in Palmar Sweating for the children with no previous experience may relate to their ability to process information. It is premature to interpret these results, but the direction of change is not inconsistent with notions that moderate levels of activation are facilitative of "work of worry" or other mechanism of

coping with stressors.

Does having more information about impending events affect the child's adjustment and recovery? Our data suggests that it does. Children who had more information prior to the actual surgery were rated by their mothers as adjusting better to the hospital experience ($r = -.54$, $p < .01$) and having fewer post-hospital behavior problems ($r = -.46$, $p < .01$; Peterson Behavior Problem Checklist).

DISCUSSION

Our results support the hypothesis that having information about impending events does facilitate hospital recovery. However, the age of the child and the previous surgery history are important considerations in deciding how information should be presented. In evaluating a slide tape preparation used for children between the ages of five and seventeen who were in the hospital for elective surgery, it was found that only those children eight years of age and older received more information from the material than those who had irrelevent film exposure. The children who had had prior surgery experience were able to recognize more information after the presentation. These results are consistent with the literature in child development. Piaget's theory would predict that the child who has reached the concrete operational stage of development, usually around 7-8, have greater ability to abstract and encode material presented to them. Greater cognitive scanning ability is noted with advancing age (Schwantes, 1979).

It is also consistent that previous experience would make the material presented in the slide tape format more familiar and therefore, easier to encode, particularly for the younger age children (Waters & Waters, 1979).

Regarding our physiological findings, the interpretation is speculative in that the meanings of increases or decreases in arousal are not clearly defined. The heart rate increase from exposure to hospital relevant material may in fact simply reflect greater attentiveness and activation. The Palmar Sweat decrease in children without prior experience may indicate that the child was underaroused in terms of theories that suggest moderate arousal facilitates information acquisition (Lacey, 1967). More research looking at changes in physiology while processing the information needs to be carried out.

In conclusion, it is important to individualize the preparatory package. We must first assess whether the child is likely to understand and benefit from the material in terms of his/her previous experience, age and anxiety levels.

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FOOTNOTES

1. This material was developed by Natalie Small, Ed.D., and is available from the Learning Resources Center, University of Florida, Gainesville, Florida 32610.

FIGURE CAPTIONS

Figure 1. Percent of information correct after exposure to hospital relevant or unrelated film.

Figure 2. Percent of information correct as a function of age.

Figure 3. Percent of information correct as a function of previous surgery experience.

Figure 4. Mean Change in heart rate pre- to post- film as a function of exposure to hospital relevant slidetape or unrelated film.

Figure 5. Mean change in Palmar Sweat Index as a function of exposure to hospital relevant slidetape or unrelated film.

Figure 6. Mean change in Palmar Sweat Index as a function of previous surgery experience in a group after exposure to hospital relevant or unrelated film.

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Table 1

Surgery Population Characteristics

	Experimental (n=21)	Control (n=21)
Sex		
Males	14	14
Females	7	7
Race		
White	17	16
Nonwhite	4	5
Experience		
Hospital Experience	16	14
No hosp. Experience	5	7
Surgery Experience	11	11
No Surgery Exp.	10	10
Age	M = 9.48	M = 9.38
	SD = 3.01	SD = 3.23

Table 2

Time of Assessment

	Baseline	Prefilm	During	Postfilm	O.R.	1 month post-discharge
Heart Rate	X	X	X	X		
Palmar Sweat Index	X	X		X		
Peabody Picture Vocabulary Test		X				
Hospital Fears Rating Scale		X		X		
Observer Rating of Anxiety		X		X		
Operating Room Behavior Rating					X	
Hospital Information Test				X		X

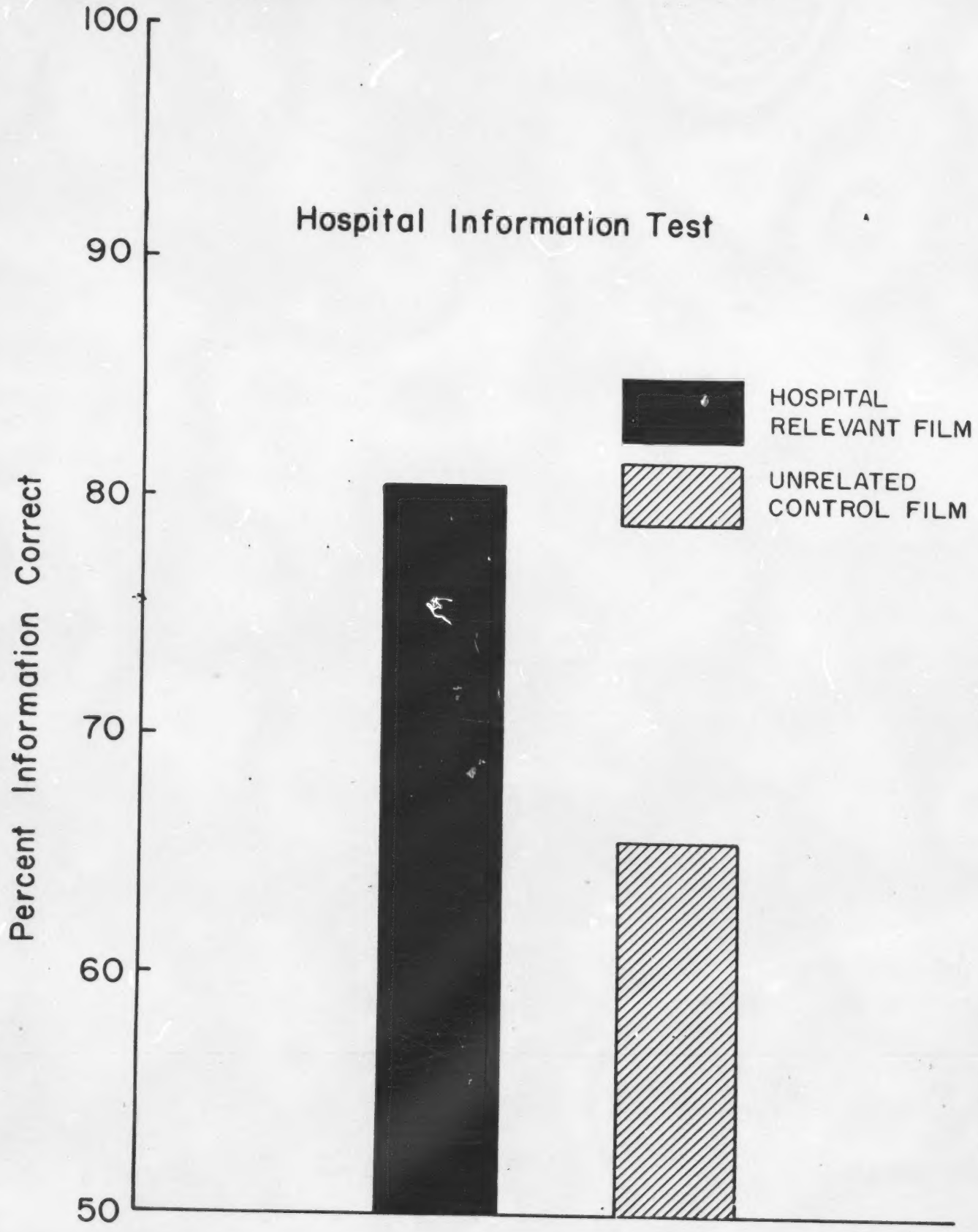

Hospital Information Test
Percent Information Correct
100
90
80
70
60
50
HOSPITAL RELEVANT FILM
UNRELATED CONTROL FILM

Figure 1.

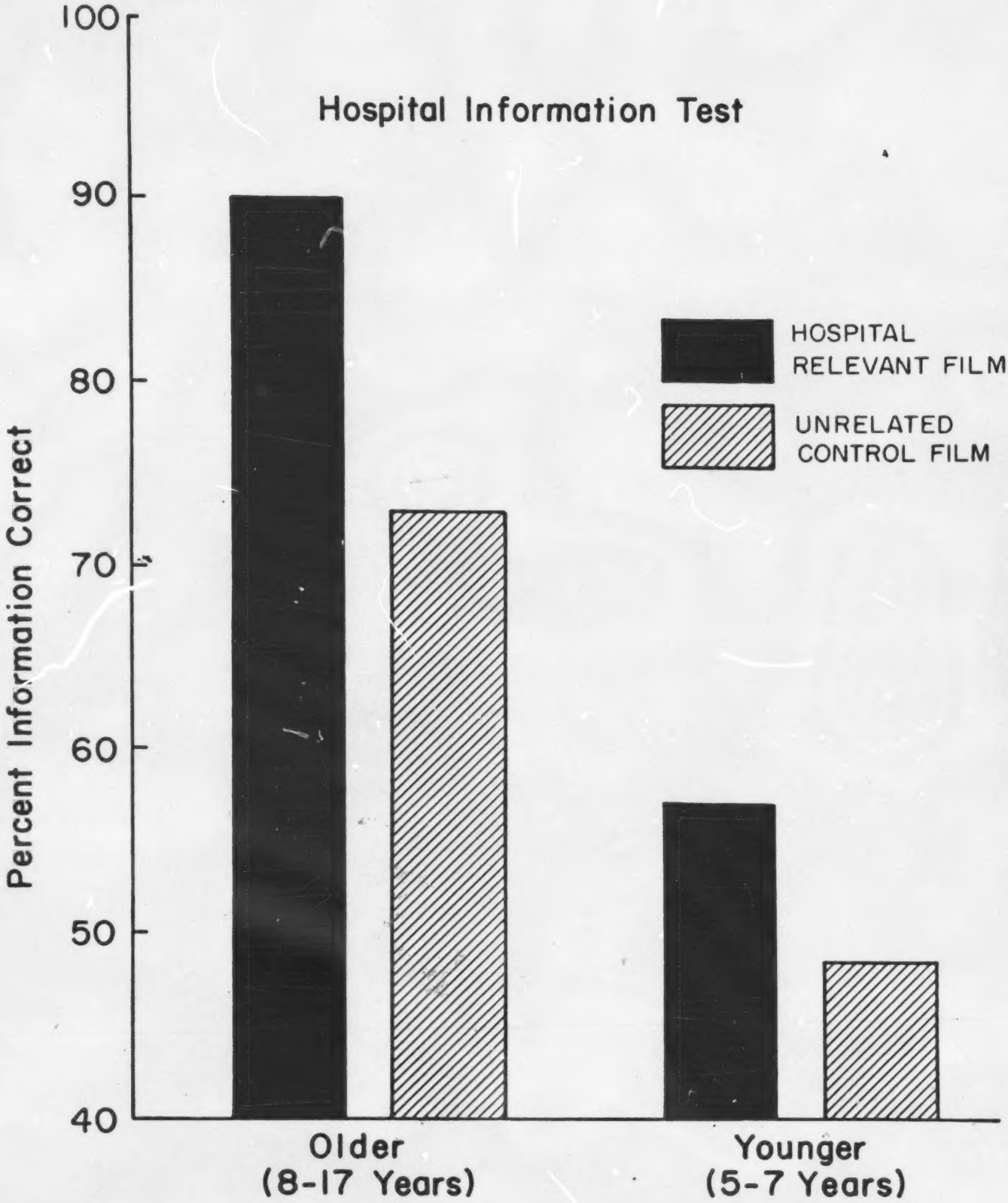

Hospital Information Test
Percent Information Correct
100
90
80
70
60
50
40
HOSPITAL RELEVANT FILM
UNRELATED CONTROL FILM
Older (8-17 Years)
Younger (5-7 Years)

Figure 2.

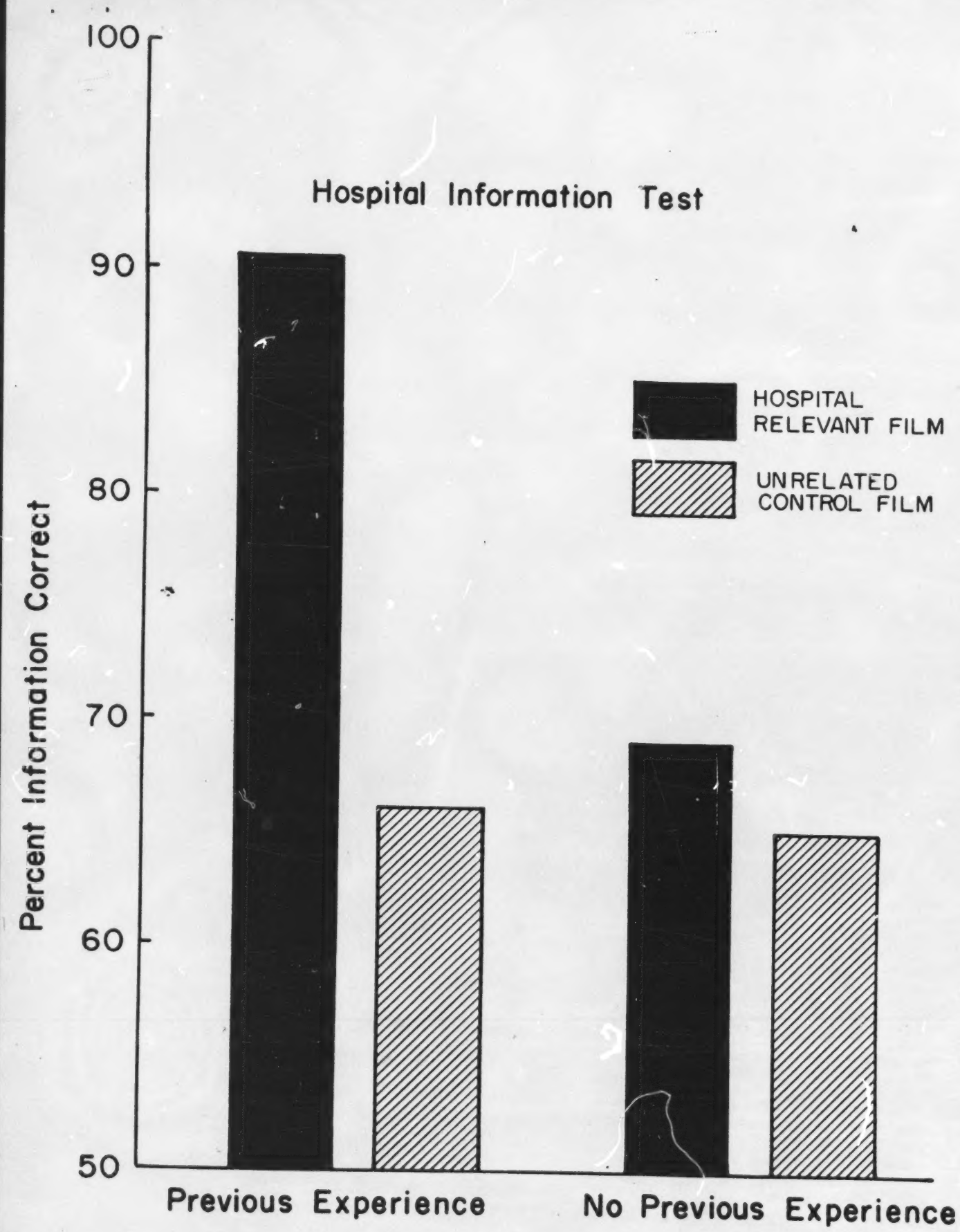

Hospital Information Test
Percent Information Correct
100
90
80
70
60
50
HOSPITAL RELEVANT FILM
UNRELATED CONTROL FILM
Previous Experience
No Previous Experience

Figure 3

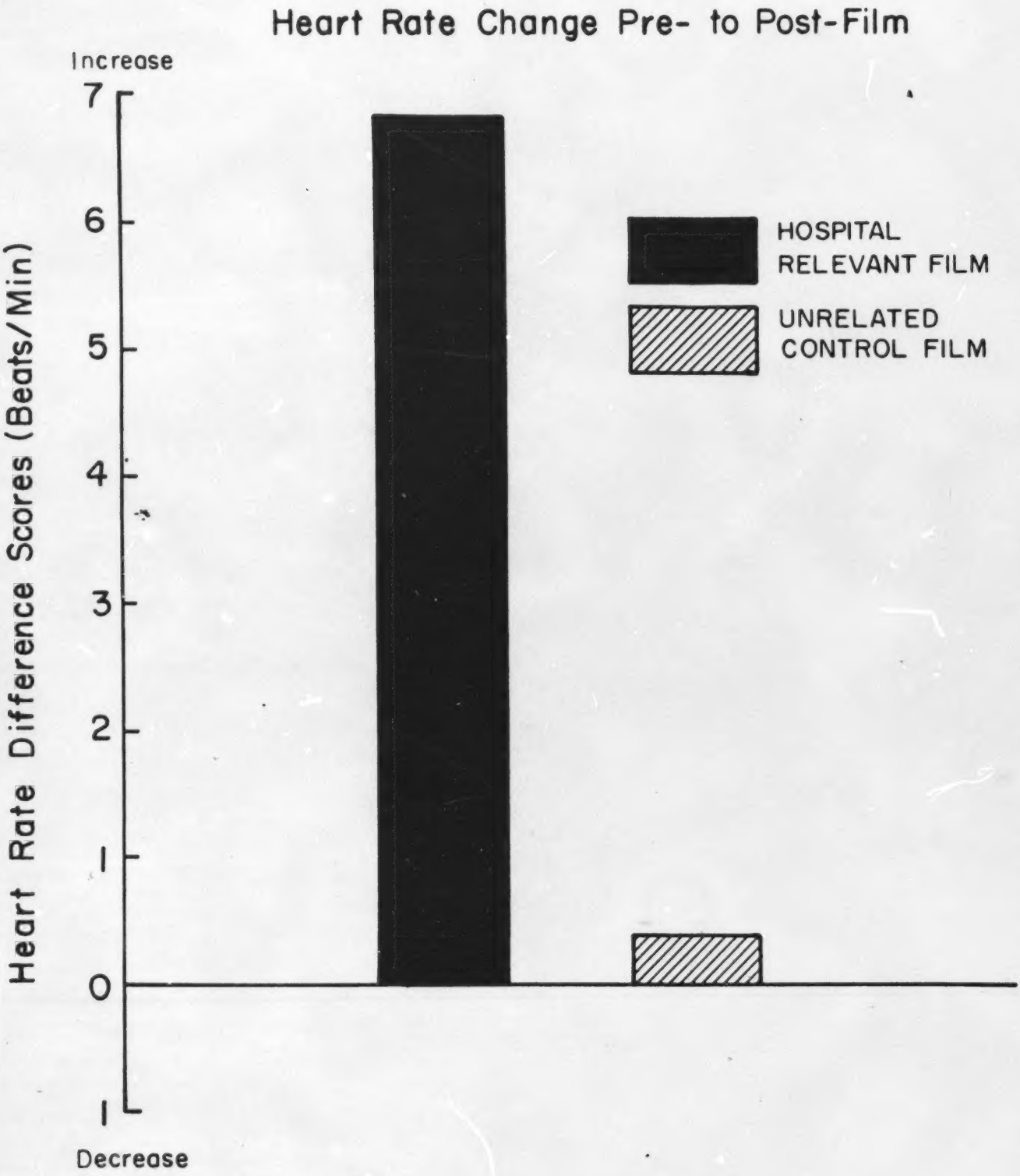
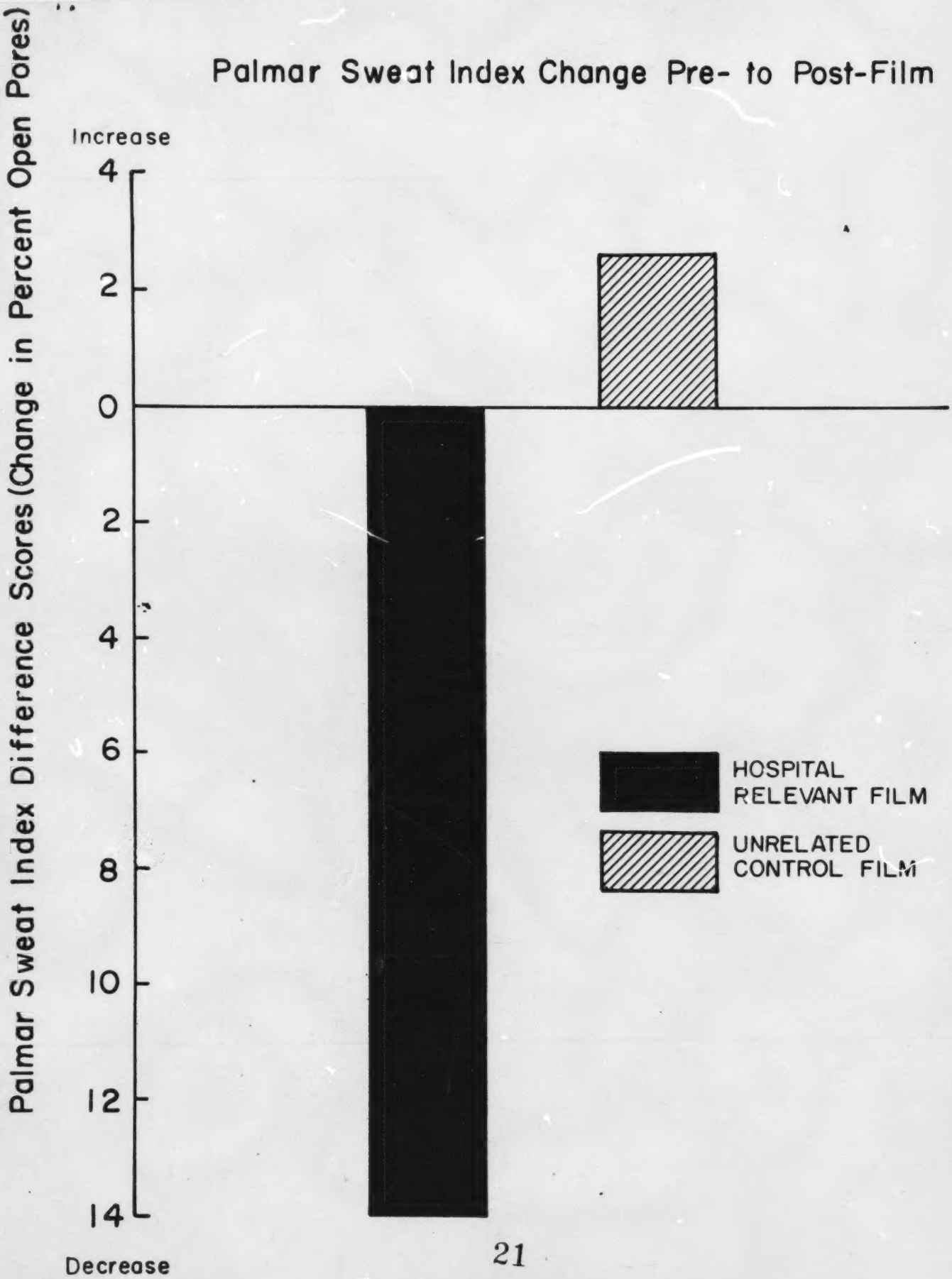

Heart Rate Change Pre- to Post-Film
Increase
7
6
5
4
3
2
1
0
1
Decrease
Heart Rate Difference Scores (Beats/Min)
HOSPITAL RELEVANT FILM
UNRELATED CONTROL FILM

Figure 4.


Palmar Sweat Index Change Pre- to Post-Film
Palmar Sweat Index Difference Scores (Change in Percent Open Pores)
Increase
4
2
0
2
4
6
8
10
12
14
Decrease
HOSPITAL RELEVANT FILM
UNRELATED CONTROL FILM

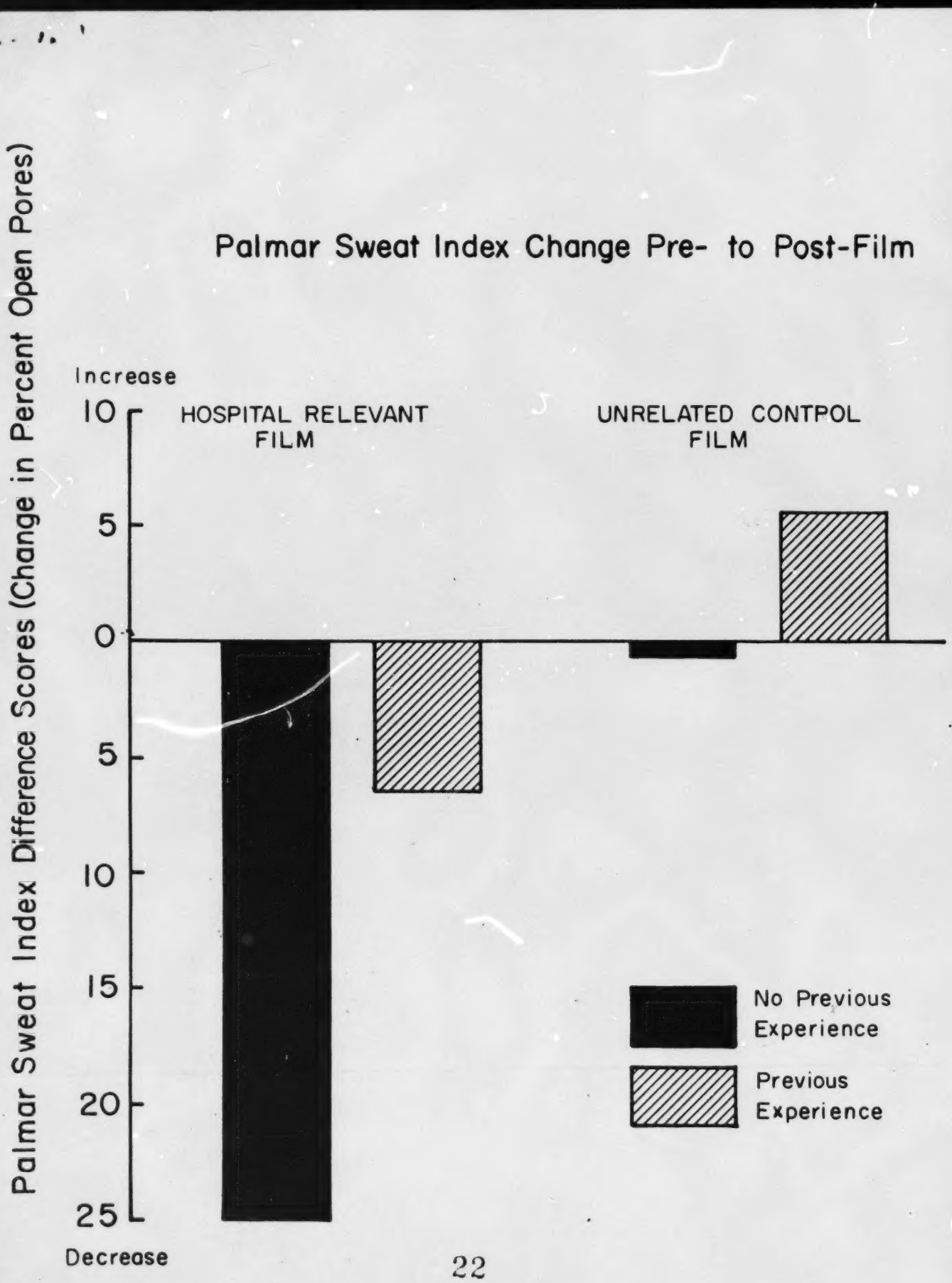

Palmar Sweat Index Change Pre- to Post-Film
Palmar Sweat Index Difference Scores (Change in Percent Open Pores)
Increase
Decrease
10
5
0
5
10
15
20
25
HOSPITAL RELEVANT FILM
UNRELATED CONTPOL FILM
No Previous Experience
Previous Experience

Figure 6